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Olearia umbricola (Asteraceae: Astereae), a new endemic species from the MacDonnell Ranges bioregion of the Northern Territory

David E. Albrecht Northern Territory Herbarium, Department of Lands, Planning & Environment,
P.O. Box 1120, Alice Springs NT 0871.Email: David.Albrecht@nt.gov.au

Abstract

Olearia umbricola Albr., *sp. nov.*, a rare species of sheltered rocky sandstone sites in the MacDonnell Ranges bioregion of the Northern Territory is described and illustrated. Notes are provided on distribution, habitat, conservation status, relationships and salient features distinguishing it from other species of *Olearia*.

Introduction

A taxonomic treatment of *Olearia stuartii* (F.Muell.) Benth. and allied species was provided by Lander (1989) where comments were made on the curious disjunct distribution pattern of *O. xerophila* (F.Muell.) Benth. Populations were identified in Western Australia and Queensland, but not between, and Lander (1989) speculated on the possibility of the species being found in suitable habitats in the intervening region of the Northern Territory. Just a year later in 1990, biologist and then Alice Springs resident Steve McAlpine, collected a specimen of an unusual *Olearia* in the MacDonnell Ranges region of the Northern Territory, c. 50 km SW of Alice Springs. The specimen was initially identified as *O. xerophila* as the leaves were broader, petiolate and had more distinct secondary venation relative to the somewhat similar regionally common *O. stuartii*. During the following decade additional, more complete specimens were gathered from new localities, enabling a more careful assessment of its identity. Based primarily on fruit characteristics, this entity was recognised as distinct from *O. xerophila* in 2011 and assigned a phrase name *Olearia* sp. Waterhouse Range (S.McAlpine s.n.) Albr. (Short et al. 2011, Council of Heads of Australasian Herbaria 2011). The intriguing disjunct distribution pattern of *O. xerophila* s. str. remains and warrants further study to ascertain whether the Western Australia and Queensland populations are the same taxon or different taxa.

In 2024 the MacDonnell Ranges was chosen as one of the Australian Government's 20 Priority Places ([MacDonnell Ranges - DCCCEEW](#)) and funding became available for control of the transformer species *Cenchrus ciliaris* L. (Buffel Grass) in sites supporting nationally threatened plant and animal species. Although currently not listed as a nationally threatened species, recent population data suggests that *O. sp.* Waterhouse Range meets the threshold criteria for listing as a nationally threatened species due to the very low total number of individuals and the imminent threat of Buffel Grass to the persistence of the species. The MacDonnell Ranges Priority Place project has provided impetus to not only undertake further survey and conservation management actions for the species, but also to complete the necessary taxonomic research including formal publication of a new name for the species.

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Methods

Preserved specimens housed at the Northern Territory Herbarium (NT), fresh field-collected specimens and live cultivated material grown under favourable conditions at the Alice Springs Desert Park (ASDP) were examined when preparing the species description.

Although the leaves of the species described herein are often rather obscurely petiolate, I have followed Lander (1989) and Nesom (2020) in providing separate lamina and petiole dimensions as they have done for the similar *Olearia xerophila*. In both species the petiole can be difficult to measure accurately because it is winged and grades into the lamina margins. Petiole length was measured from the point where the petiole wings diverge slightly from the parallel into the blade margins, to the point of attachment with the stem.

Capitula on pressed specimens were rehydrated with boiling water prior to assessing floral characters. Capitula length was measured from the base of involucre to the tip of the lobes of the disc florets. Involucre diameter was measured at anthesis. Anther length includes the terminal appendages. Receptacle width was measured on fruiting capitula.

Taxonomy

Olearia umbricola Albr., sp. nov.

Type: Northern Territory: Waterhouse Range, c. 2.74 km due ENE of Southern Cross Bore, 3 Sept 2023, D.E. Albrecht 16746 (holo: NT D0290510; iso: DNA).

Olearia sp. Waterhouse Range (S.McAlpine s.n.) Albr. Council of Heads of Australasian Herbaria (2011), *Australian Plant Census*; Short, P.S., Albrecht, D.E., Cowie, I.D., Lewis, D.L. & Stuckey, B.M. (ed.) (2011), *Checklist of the Vascular Plants of the Northern Territory*: 18; Cuff, N.J., Albrecht, D.E., Elliott, L.P., Webb, A.T. & Cowie, I.D. (eds) (2024), *Checklist of the Vascular Plants of the Northern Territory*: 17.

Olearia xerophila auct. non (F.Muell.) Benth.: Albrecht, D.E., Duguid, A.W., Coulson, H., Harris, M.G. & Latz, P.K. (2007), *Vascular plant checklist for the southern bioregions of the Northern Territory* Edn. 2: 83.

Rounded to spreading, often dense *shrub* to 60(–80) cm high. *Indumentum* on stems, leaves, peduncles and involucral bracts of patent moderately dense short gland-tipped hairs of variable length, glandular head usually pale yellowish in dried material, some reduced to sessile glandular globules or appearing so, the underlying tissue visible beneath. *Stem* internodes obscurely or weakly ribbed in fresh material, the ribs becoming more prominent in dried material, extending downwards from leaf midvein, occasionally also a weak decurrent longitudinal rib extending shortly downwards from either side of leaf bases; gland-tipped hairs 0.05–0.4(–0.7) mm long, the longer class often very narrowly conical and more conspicuously septate; leaf axils with a white woolly indumentum to c. 2 mm long. *Leaves* alternate, mostly widely spreading, petiolate, with a marked sweet resinous aroma when bruised, slightly sticky to touch, stub-like bases semi-persistent on penultimate growth; lamina flat to weakly longitudinally folded, elliptic to obovate, (6–)10–50(–60) mm long, 4–20(–26) mm wide, concolorous,

green, both surfaces with gland-tipped hairs 0.05–0.3(–0.4) mm long, the longer class sometimes very narrowly conical and more conspicuously septate, occasionally with few longer tangled septate non-glandular hairs on proximal margins, a patchy resinous sheen sometimes present on dried material; midvein raised and prominent abaxially, more obscure and within a channel adaxially, secondary veins less prominent to obscure on both surfaces; base gradually or occasionally more abruptly narrowing to a petiole; margins flat to undulate, serrate to biserrate, sometimes coarsely so; apex obtuse, rarely subacute, usually with a short callus-like projection; petiole 2–8 mm long, channelled on adaxial surface, distinctly broadening near attachment to stem. *Capitula* solitary, terminal, pedunculate, radiate, 6.5–9.5 mm long, (15–)17–28 mm diameter. *Peduncles* 10–60(–80) mm long, often with a reduced leaf at base and 3–13 bracts scattered along their length, with gland-tipped hairs 0.05–0.3(–0.4) mm long, the longer class usually narrowly conical and more conspicuously septate; peduncular bracts appressed or steeply ascending, subulate to narrowly lanceolate, 2–5 mm long, 0.3–0.8 mm wide, with gland-tipped hairs 0.05–0.2 mm long, entire, acute. *Involucre* cup-shaped to shortly cylindrical, 5–10 mm diameter; bracts 43–82, 4 or 5-seriate, progressively becoming longer and broader, with gland-tipped hairs 0.05–0.1 mm long abaxially; outer and intermediate involucral bracts subulate to narrowly triangular, 1.5–5 mm long, 0.3–1 mm wide, with a central herbaceous line and hyaline margins, apex long acute ± recurved; inner involucral bracts narrowly lanceolate to narrowly oblanceolate, 5–7 mm long, 0.5–1 mm wide, herbaceous part broader in distal half, hyaline margins broader in proximal half, obscurely serrulate, apex acute to long acute. *Receptacle* flat to weakly convex, (1.5–)2–3 mm across, with low irregular ridges between the floret scars. *Ray florets* 29–51, 1 or 2-seriate, female, corolla tube 1.8–3.5 mm long, glabrous; ligule 5–10 mm long, 0.6–1.5 mm wide, violet to pale violet, sometimes paler proximally, apex rounded to subacute, obscurely shortly 3-lobed; stylar arms linear, 0.8–1.7 mm long. *Disc florets* 17–54, bisexual, yellow, corolla tube 3.5–5 mm long, cylindrical in lower third to half, broadening above to lobes, glabrous; corolla lobes 0.5–1 mm long, acute; anthers 1.4–2.0 mm long including narrowly triangular sterile terminal appendages 0.3–0.4 mm long; stylar arms narrowly oblong to linear–oblanceolate, 1–1.4 mm long. *Cypselas* oblong–ellipsoid to narrowly obovoid, transversely elliptic in cross-section, 1.6–2.3 mm long, 0.5–0.6(–0.7) mm wide, c. 0.3 mm thick, light brown, 6–9-ribbed, with appressed or steeply antrorse non-glandular hairs to c. 0.2 mm long throughout, the hairs white with a brown base, sometimes with a few gland-tipped hairs apically, tapering gradually to base, carpopodium slightly oblique. *Pappus* 1-seriate; bristles barbellate, 13–21, the longest 2.3–4 mm long, readily falling, white. (Figure 1)

Diagnostic characters: Distinguished from other species of *Olearia* by the combination of the following characters: indumentum of patent moderately dense short gland-tipped hairs of variable length except for dense white woolly hairs in leaf axils; leaves alternate, petiolate; leaf lamina elliptic to obovate, serrate to biserrate; capitula solitary; ray florets 29–51 and disc florets 17–54; ligules violet; cypselas 1.6–2.3 mm long, 6–9-ribbed and with appressed or steeply antrorse white hairs throughout; pappus 1-seriate, lacking a reduced outer row.

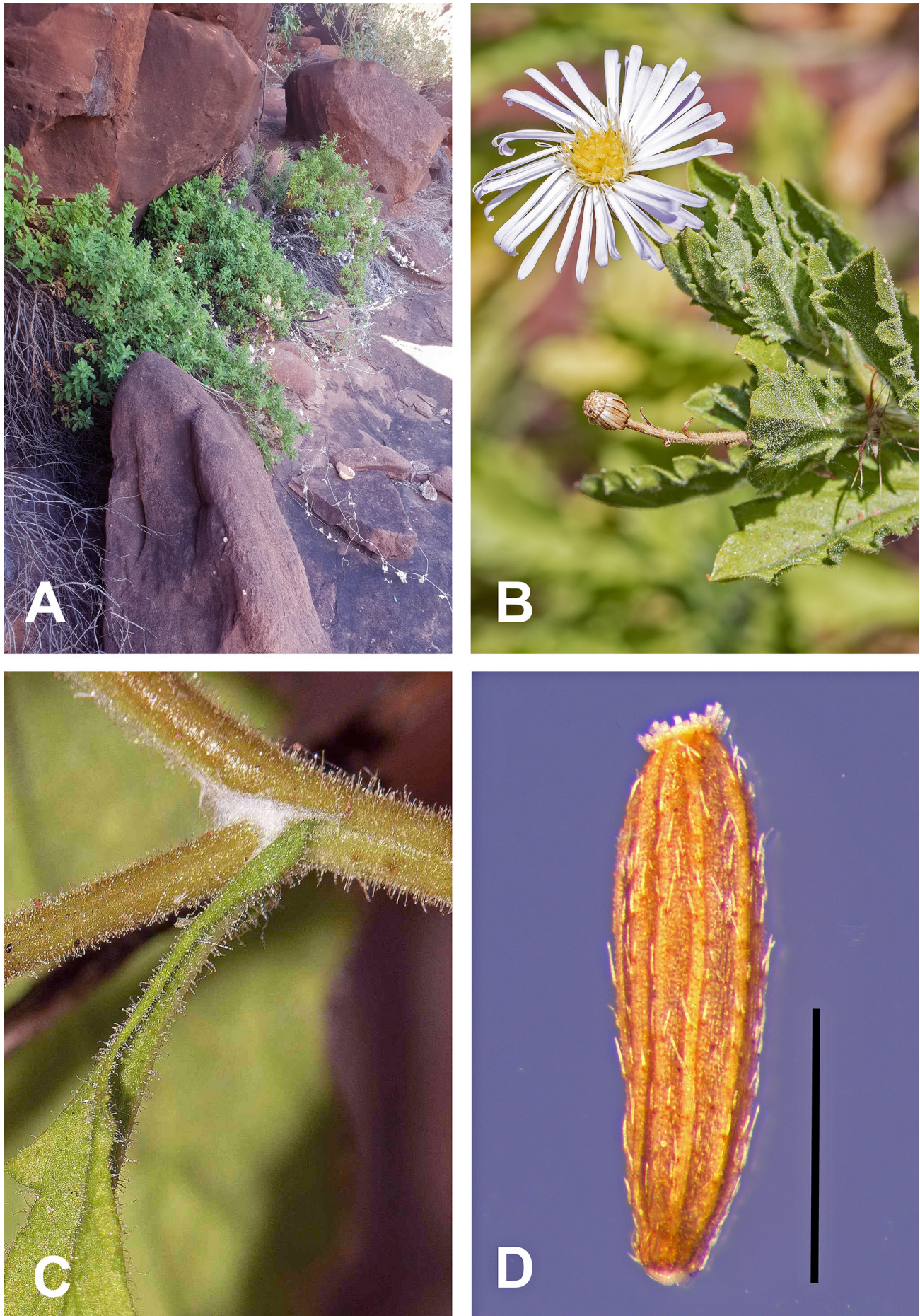


Figure 1. *Olearia umbricola*: **A**, habit and habitat; **B**, distal portion of flowering branch; **C**, leaf axil showing woolly indumentum; **D**, cypsela. Scale bar: D = 1 mm. Images A & D by D.Albrecht from D.E.Albrecht 16746; B & C by A.Webb from D.E.Albrecht 16900, A.Webb & R.Boyne.

Specimens examined: NORTHERN TERRITORY: Waterhouse Range; near Southern Cross Bore, 3 Feb 2009, *D.E.Albrecht* 13190 & *P.K.Latz* (AD, CANB, NT); Finke Gorge N.P., S side of the Amphitheatre, 2.13 km due SSW of the start of the Mpaara Walk, 9 Oct 2024, *D.E.Albrecht* 16900, *A.Webb* & *R.Boyne* (NT); Ntaria ALT, Mission Gap area, 9 km due WSW of Palm Paddock outstation, 11 June 2025, *D.E.Albrecht* 17001 & *D.J.Randall* (DNA, NT); Ntaria ALT, Mission Gap area, 8 km due SW of Palm Paddock outstation, 12 June 2025, *D.E.Albrecht* 17002 & *D.J.Randall* (NT); Ntaria ALT, Mission Gap area, 8.6 km due WSW of Palm Paddock outstation, 12 June 2025, *D.E.Albrecht* 17005 & *D.J.Randall* (NT); Ntaria ALT, 6.7 km due SW of Finke Gorge National Park ranger station, 13 June 2025, *D.E.Albrecht* 17017 & *D.J.Randall* (NT); 2 km SE of Palm Valley Campground, 10 Aug 2003, *P.K.Latz* 18941 (NT); SE Waterhouse Range, 50 km SW of Alice Springs, 11 Oct 2003, *P.K.Latz* 19469 (NT); 16 km WSW of Palm Valley

Campground, 1 Sept 2010, *P.K.Latz* 25800 & *A.Schubert* (DNA, NT, MEL); 2 km SE of Palm Valley Campground, Finke Gorge N.P., 3 Dec 2010, *P.K.Latz* 26289 (NT); 47 km SW of Alice Springs, SE Waterhouse Range, 4 km East of Southern Cross Bore, 17 Dec 2010, *P.K.Latz* 26312 & *S.Leadbeater* (NT, PERTH); Southern Waterhouse Ranges, 22 Aug 1990, *S. McAlpine* s.n. (NT); 1.2 km WSW of Mission Gap, 12.5 km SW of Palm Valley, Ntaria ALT, 12 Aug 2006, *A.Schubert* 138 (NT); 1.5 km SW Mission Gap, 13 km SW Palm Valley, Finke Gorge N.P., 15 May 1994, *A.Schunke* 1800 (DNA, NT).

Distribution: *Olearia umbricola* is endemic to the Northern Territory, where it is confined to the MacDonnell Ranges bioregion. It has a patchy distribution between the eastern end of the Waterhouse Range and Mission Gap (Fig. 2).

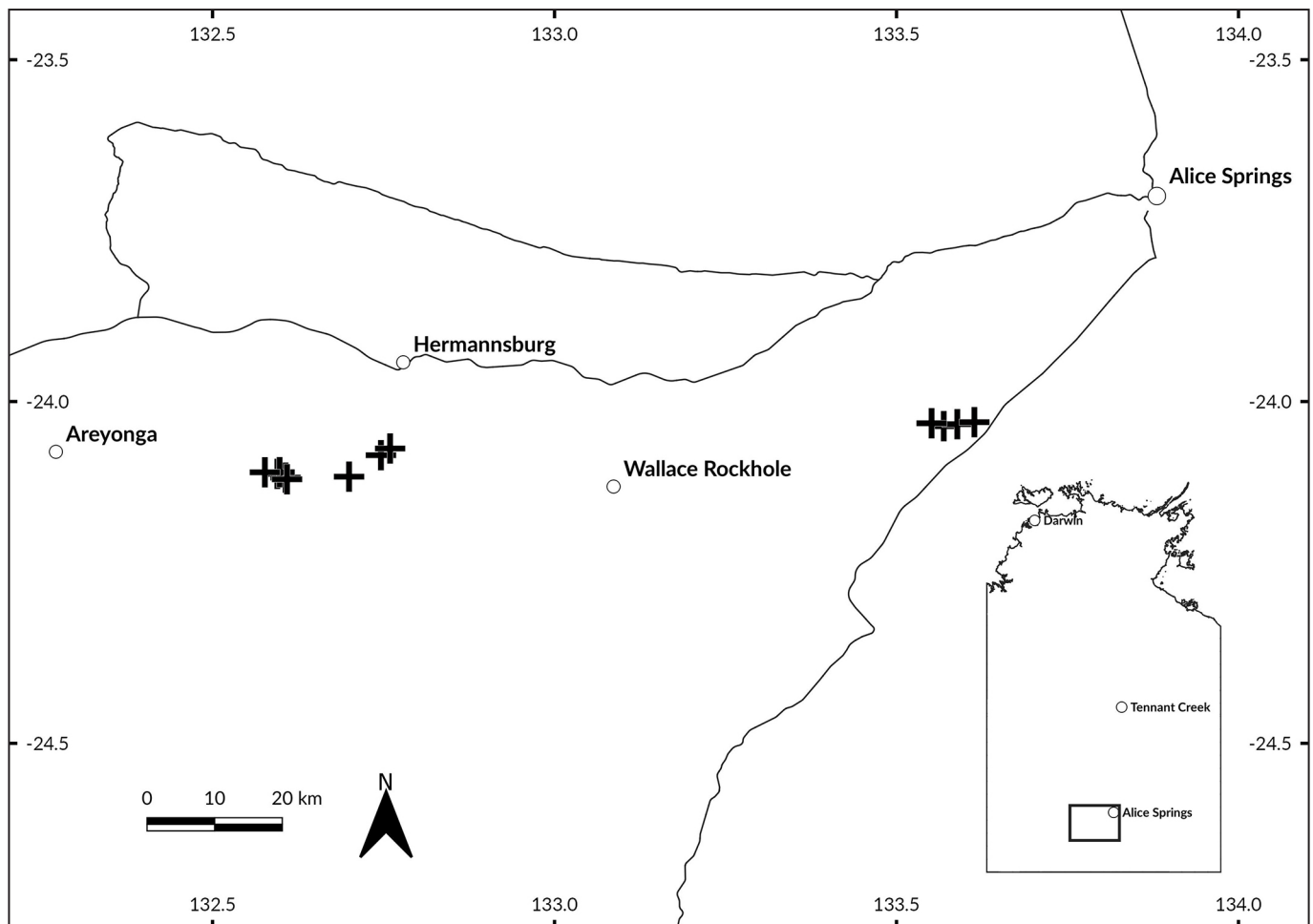


Figure 2. Distribution of *Olearia umbricola* (black crosses) based on specimens in the Northern Territory Herbarium (NT).

Habitat: *Olearia umbricola* has a very specialised ecological niche, occurring on sheltered, south-facing slopes of ranges composed of Hermannsburg sandstone. It is associated with bare rock expanses, including cliff ledges and rock overhangs, and rocky or bouldery sites below cliffs. These habitats are amongst the most protected sites in the landscape and provide a degree of natural fire protection (fig. 1a). The sandstone rocks at or adjacent to known subpopulations are typically impregnated

with calcrete, producing soils with a tendency towards alkaline (pH c. 7.5–7.75 at 3 sites checked). Species commonly associated with *Olearia umbricola* include *Pandorea doratoxylon* (J.M.Black) J.M.Black, *Abutilon leucopetalum* (F.Muell.) F.Muell. ex Benth., *Dodonaea viscosa* subsp. *mucronata* J.G.West, *Harniera kempeana* (F.Muell.) R.M.Barker, *Apowollastonia stirlingii* (Tate) Orchard, *Sida* sp. Rainbow Valley (*D.E.Albrecht* 6601) R.M.Barker, *Brachyscome tesquorum* J.M.Black, *Enneapogon oblongus* N.T.Burb. and *Cheilanthes lasiophylla* Pic.Serm.

Conservation status: Currently, this species is listed as Least Concern in the Northern Territory (Northern Territory Herbarium 2015–), however recent targeted fieldwork has revealed that its habitat is far more specialised and restricted than previously thought. At the time of publication, it is being considered for a revision in conservation status, and it is plausible that it will qualify as threatened under the *Territory Parks and Wildlife Conservation Act 2000* and the *Environment Protection and Biodiversity Conservation Act 1999*. It is known from 12 localised patches, all under 1 ha, comprising <5 to c. 250 plants. The total population currently known is under 1000 individuals. Additional (likely small) patches may be discovered in the future with further targeted survey effort. A large majority of the population occurs on Ntaria ALT (Aboriginal Land Trust), with less than 100 plants recorded within conservation Reserves (Finke Gorge National Park and Owen Springs Reserve). Using the IUCN Red List assessment tool GeoCAT (Bachman et al., 2011) the Extent of Occurrence was calculated at c. 239 km² and the Area of Occupancy estimated to be 36 km².

The species is likely to be fire-sensitive and as such is expected to be threatened by too frequent hot fires. In the past, the predominance of bare rock in its habitat would have provided protection from fire, however the introduced perennial grass *Cenchrus ciliaris* (Buffel Grass) now occurs at all known sites, increasing the volume and continuity of fuel load. Direct competition and altered fire regimes associated with Buffel Grass invasion pose a significant risk to the persistence of *Olearia umbricola*, and without active management intervention to substantially reduce Buffel Grass cover, population decline is highly likely. The patches on the Waterhouse Range face the greatest risk at present due to the low number of plants present and high Buffel Grass fuel loads.

A limited quantity of seed is currently stored in the Alice Springs Desert Park (ASDP) seed bank, however more extensive seed collections are required before the cache becomes a viable conservation seed bank.

Phenology: As flowering specimens have been collected in most months of the year, it is assumed that like many arid zone perennial species it can flower any time of the year if sufficient soil moisture is available.

Etymology: The specific epithet is derived from the Latin, *umbra*-shade and *cola*- dweller, in reference to the strict occurrence of the species in sheltered locations receiving no or very limited direct sunlight.

Affinities: *Olearia umbricola* resembles and has been confused in the past with *O. xerophila*. The two species are readily separated on fruit ribbing (the faces longitudinally ribbed in *O. umbricola*, cf. un-ribbed in *O. xerophila*) and leaf axil indumentum (with white woolly hairs in *O. umbricola*, cf. lacking woolly hairs in *O. xerophila*). Additionally, *O. umbricola*, apparently lacks non-glandular hairs on the stems, whereas they are present on *O. xerophila*.

Olearia umbricola is less likely to be confused with *O. stuartii* as adult plants of the latter have narrower leaves (rarely exceeding

8 mm wide, cf. 4–20 (–26) mm wide in *O. umbricola*). *Olearia stuartii* also differs from *O. umbricola* in having un-ribbed fruits and non-woolly leaf axils.

Two samples of *Olearia umbricola* were included in the Asteraceae phylogenetic analyses by Chen et al. (2024) using Angiosperms 353 target capture data. Both samples came out in the same position in the phylogeny, however the species' evolutionary relationships are unresolved as key species such as *O. xerophila* were not included in the analysis. Given the absence of firm evidence, it cannot be said with certainty if *O. umbricola* is part of *Olearia sens. str.* or of any of the segregate genera proposed by Nesom (2020), noting that Nesom's subdivision of *Olearia* has not gained broad acceptance (Albrecht et al. 2024; Messina 2025). The molecular data is unequivocal with respect to *O. umbricola* being nested within the main Australian lineage of *Olearia* as opposed to Celmsiinae (Chen et al. 2024; Saldivia & Nicol 2023; Saldivia & Nicol 2025).

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